Media Theory and History

DATA 74200
#61130

Tuesday, 4:15 - 6:15 PM
Rm 3310A
The Graduate Center, CUNY (City University of New York)
365 5th Avenue, New York City

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The class meetings may not not take place during one and or more weeks due to the instructor's conference travel. For these dates, we will have a visitor covering the class, or you will be given homework.

Course Description

This seminar will introduce students to many very influential ideas and works by key modern and contemporary thinkers about media, digital media, and software culture.
Because historically these ideas were developed in relation to particular technologies and media that came into prominence in different periods, we will also touch upon aspects of media history including photography, film, television, Internet, social media, artificial intelligence, big data, data science, and data art. The seminar will also make use of my own selected articles and book chapters from *The Language of New Media*, *Software Takes Command*, *Instagram and Contemporary Image*, and *Cultural Analytics* (forthcoming).

Grading:

1) Class attendance. You are allowed to miss one class meeting without any explanation. If you miss any more meetings without a valid excuse, your grade will be lowered by half a grade (A becomes A-, etc.) for each missed class.
2) Class participation: %20. If you are taking the class for credit, you are expected to participate in class discussions.
3) Take home midterm essays: %25. You will be assigned two short essays that demonstrate your understanding of assigned readings and questions discussed in class (600-800 words each.)

4) Take home final essays: %25. You will be assigned two short essays that demonstrate your understanding of the readings assigned during the second part of the course and questions discussed in class (600-800 words each.)
5) Take home final paper or project: %30. You have two topics: Option 1: a final paper where you can engage with any of the topics and readings from the class while also analyzing other media phenomena, and bringing in additional theories. Length: 1500 to 2000 words. Option 2: You can develop an essay that complements a practical data visualization, data analysis, DH, or media project that you developed in another class. This essay should discuss topic(s) of your project using one or more theories we covered.
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Readings

Because our course meets only once a week, not all course material can be covered in our two hour classes. Therefore it is critical that you do all assigned readings and view all assigned websites, online projects and videos. Some of the readings will be discussed in class meetings. Other readings will not be discussed - and this will be indicated in the schedule. All texts used in the class are freely available online.

Class students

Class schedule

The topics schedule below is likely to change during the semester. Approximately two class meetings will be devoted to each topic. All assigned readings are available online. The exact readings for each week will be specified beforehand.

January 28. Class Introduction.

What is “media”?

Media as mediation
Media as representation
Media as mass communication
Media as material
Medium - as artistic medium
Media as senses

1 Computers, Interface, Software

(1960 – 2020)
Vannevar Bush, Ted Nelson, Alan Kay, Friedrich Kittler, Jay Bolter

February 4. Interactive computing and metamedia.

Class assignments and notes

NYC relevant events this week:
2020 NYC digital humanities week

Exhibition opening this Thursday: The Question of Intelligence — AI and the Future of Humanity,

February 11: Theorizing computer media at the turn of the century

Assigned readings:

1) Janet Murray, Inventing the Medium, in *New Media Reader* (2003), pp. 3-11.

2) Lev Manovich, New Media from Borges to HTML, in *New Media Reader* (2003).
Read the following sections only (the rest of the article is recommended but not required):
"Software Design and Modern Art: Parallel Projects" (pp. 15-16)
"New Media as a Mix between Existing Cultural Conventions and the Conventions of Software" (pp. 18-19)
"Four Decades of New Media" (pp. 23-25)

3) Alexander Galloway, selections from *The Interface Effect* (2012):

If the Cinema Is an Ontology, the Computer Is an Ethic (pp. 10-24).
The Unworkable Interface (pp. 25-53).

Assigned video:

Computer Punch Cards Historical Overview

IBM 360, 1964

The Incredible Machine, Bell Labs, 1968

Prediction of the Home Computer (1960's)

Class Notes:

video:

Original Mac Interface (1984)
Original Apple commercial (1984)

Examples of fictional interfaces in movies:
Blade Runner (1982)
Minority Report (2002)
Her (2013)

Questions:

- Is it useful to define key properties of the computer? Do lists of such properties depend on how computers have been used up to this point? Can we think about computers without always contrasting them to “old media”?

  Galloway:

  “The notion is that one must define the medium with reference to a specific "language" or set of essential formal qualities, which then, following the metaphysical logic, manifest in the world a number of instances or effects…” [examples of this approach: Murray, Manovich] (p. 19.)

  “the computer has hitherto been defined ontologically; but this approach (using the ontological concepts of possibility and definition) is dubious because the computer itself is already a matter of possibility and definition; thus if the computer might better be

understood in terms of a practice or a set of executions or actions in relation to a world, the proper branch of philosophy that one should turn to is ethics or pragmatics, not ontology or metaphysics; as an ethics, the computer takes our execution of the world as the condition of the world's expression." (p. 23)

- How is software different from other tools?

- If the foundation of modern computing was established by the end of the 1960s, what are the key developments of the following decades? How much DNAs of contemporary computing still go back to the 1960s?

Texts:

1) **Murray:**

P. 3.
"The digital medium...may seem plural to us now, because it is so myriad in its forms.."
"Bush, of course, is not thinking about the 'computer'- and neither is Borges. Instead, they are inventing fantasy information structures."

P. 6
"Representational power of the computer derives from its four defining qualities [of the computer]: its procedural, participatory, encyclopedic, and spatial properties."
"Digital computer… is simply the largest medium human beings ever invented"
"The spatial quality of the medium..is based on the two most basic and defining attributes: its processing power..and its participatory quality.".."the spatial property..is so fundamental to the way we experience the world"
Video games - participatory and spatial
Www - encyclopedic and spatial

P.7
"Like the computer scientists … McLuhan saw the media as "extensions of man", a means to augment our powers of perception and communication."
P. 8 - good summary of beginnings of cultural studies and humanistic communication studies

2) **Manovich:**

P. 15-16
"Technologies overtake art."
"These technologies have become the greatest art works of today."

“No cultural fields do far remain more unrecognized than.. HCI”

P. 24-25

“The paradigm that still defines our understanding and usage of computing was defined in the 1960s” - what are the new elements today?

“A new set of roles for the modern digital computer: a manipulator of existing media (Photoshop), a media synthesizer (film special effects, sound software), and a new medium on its own right (computer games).”

“..it makes sense that the end of Cold War and the design of the Web took place at exactly the same time.” (1990)...”a radically horizontal, non-hierarchical model of human existence in which no idea, no ideology, and no value can dominate the rest..”

3) **Galloway**

To show in class - superpaint - https://web.archive.org/web/20040612215245/http://accad.osu.edu/~waynec/history/PDFs/Annals_final.pdf

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2 Media Theory / futurism / histories of communication media

(1960 - 1990)

Marshall McLuhan, Alvin Toffler, Friedrich Kittler

- Spectacle

February 18: Media and Change: Toffler

Assigned readings and video:

1) **Marshall McLuhan** / bio

Watch: Short segment from This is Marshall McLuhan: The Medium is the Massage

Watch: Marshall McLuhan: The World is Show Business

Understanding Media: Extensions of Man (1964) / about the book
Read: chapter 1 from *Understanding Media*

Read: The Laws of Media (1975)

1. What does the medium enhance?
2. What does the medium make obsolete?
3. What does the medium retrieve that had been obsolesced earlier?
4. What does the medium reverse or flip into when pushed to extremes?

Browse through: *The Medium is the Massage* (1967)

2) **Alvin Toffler** / bio

Future Shock (1970) / about the book

Read the following chapters from Full book text on archive.org
Introduction;
Chapter 8. INFORMATION: THE KINETIC IMAGE;
Chapter 10. THE EXPERIENCE MAKERS.

And also read one more chapter - any one.

3) Recommended to watch: future as seen in 1967:

The Futurists

Class notes:

Future interfaces:

- Knowledge Navigator Apple video (1987)
- Blade Runner (1982)
- Minority Report (2002)
- Her (2013)

Frank and Lillian Gilbreth - Time and Motion Studies video / text

Chaplin, Modern Times (1936) scene

Gentle Monster stores

Fun palace

Toffler, *Future Shock* (1970)
Once we commit ourselves to a particular model, however, we fight energetically to build it, and perhaps even more so to preserve it against challenge. For the style becomes extremely important to us. This is doubly true of the people of the future, among whom concern for style is downright passionate...The real reason why life styles are so significant—and increasingly so as the society diversifies—is that, above all else, the choice of a life style model to emulate is a crucial strategy in our private war against the crowding pressures of overchoice...Once a commitment to a style is made, we are able to rule out many forms of dress and behavior, many ideas and attitudes, as inappropriate to our adopted style.

The Second Wave Society is industrial and based on mass production, mass distribution, mass consumption, mass education, mass media, mass recreation, mass entertainment, and weapons of mass destruction. You combine those things with standardization, centralization, concentration, and synchronization, and you wind up with a style of organization we call bureaucracy.

February 25: Visit to MoMA - media and modernity

March 3:
Media Effects and Media History: McLuhan and Kittler

1) **Marshall McLuhan** / bio

[exactly the same readings were assigned last time, but now we will discuss it in class]

Watch: Short segment from This is Marshall McLuhan: The Medium is the Massage

Watch: Marshall McLuhan: The World is Show Business

Read: chapter 1 from *Understanding Media: Extensions of Man* (1964) / about the book

Read: The Laws of Media (1975)

> What does the medium enhance?
> What does the medium make obsolete?
> What does the medium retrieve that had been obsolesced earlier?
> What does the medium reverse or flip into when pushed to extremes?

Browse through: *The Medium is the Massage* (1967)

2) Friedrich Kittler / summary and biography

Read: The History of Communication Media, in ctheory.net (1996).

Read: Gramophone, Film, Typewriter, *October 41* (summer 1987).

March 10:
Media Effects and Media History: McLuhan and Kittler (continued)

1) Read: Kittler, The History of Communication Media, in ctheory.net (1996).

2) Browse through: McLuhan, *The Medium is the Massage* (1967)

March 24:
Data Science and Data Visualization

Class notes:

Locals and tourists (2010):
https://labs.mapbox.com/labs/twitter-gnip/locals/#5/38.000/-95.000 (interactive)
https://www.flickr.com/photos/walkingsf/albums/72157624209158632/ (high-res images)

More Erik Fisher's projects: https://flowingdata.com/tag/eric-fischer/

Race and Ethnicity project (using 2000 census)

Media coverage of the project:

https://www.theatlantic.com/national/archive/2010/09/mapping-the-segregation-of-u-s-cities/344078/

photographs as maps (20th century systematic governments photo surveys)
https://nycma.lunaimaging.com/luna/servlet/

https://digitalcollections.nypl.org/collections/collection-of-photographs-of-new-york-city#/?tab=navigation
https://digitalcollections.nypl.org/collections/lane/photography-collections

Every building on the Sunset Strip (1966)
https://blogs.getty.edu/pacificstandardtime/explore-the-era/worksofart/every-building-on-the-sunset-strip/

https://www.artgallery.nsw.gov.au/collection/works/429.2008.a-bbb/
https://i.pinimg.com/originals/f1/07/fb/f107fb23b775b9a23f6be78f44b475d6.png

Not covered - will talk about these later:

On Broadway (2014-2015)
http://on-broadway.nyc/

Selficity
Selfiecity (2014) and Selficity London (2015)

Homework for April 2

1) Our topic is data visualization, so we will learn about the work and ideas of some of the most influential people and organizations in this field:

    - Hans Rosling and Anna Rosling, founders of Gapminder Foundation: https://www.gapminder.org/

Watch Hans Rosling's famous 2006 TED talk (it played an important role in popularizing interactive web visualization):
https://www.ted.com/talks/hans_rosling_the_best_stats_you_ve_ever_seen

Visit Gapminder interactive visualization tool and explore it:
https://www.gapminder.org/tools/#$chart-type=bubbles

Play income over time animation - compare 1990 and 2015 - and think about this question: Why we never hear about this dramatic shift in world's income levels in popular media or academic texts? (1990: 40.2% live below extreme poverty level; 2015: 11.3% live below this level)? Or many other very positive temporal trends Gapminder reveals?
https://www.gapminder.org/tools/#$state$time$value=1816:;&chart-type=mountain

Watch a talk by Anna Rosling about Gapminder more recent project *Dollar Street*:
https://www.youtube.com/watch?v=vvsAvvKeGhc

Explore *Dollar Street*: https://www.gapminder.org/dollar-street/matrix

Watch these TED talks by these well-known visualization designers:

https://www.ted.com/talks/aaron_koblin
https://www.ted.com/talks/jer_thorp_make_data_more_human
https://www.ted.com/talks/david_mccandless_the_beauty_of_data_visualization
https://www.ted.com/talks/manuel_lima_a_visual_history_of_human_knowledge
https://www.ted.com/talks/giorgia_lupi_how_we_can_find_ourselves_in_data

2) The development and popularity of data visualization techniques in the 18th and 19th centuries are closely connected to the emergence of social statistics. The history of social statistics is also very important because it allows us to put the recent rize of "big data" and its use to predict economic and social behaviors in a longer historical context -

Read *Chapter 3: The Law of Large Numbers* from Philip Ball, *Critical Mass: How One Thing Leads to Another* (Farrar, Straus and Giroux, 2006).

By April 7:

Using the new class spreadsheet, write answers to some of the questions I posted about these readings, and/or other notes related to these readings.

April 7:

Sensing, Modelling, Predicting: “big data,” social sensing, and social simulation

Additional datavis to look at - added April 4

https://www.nytimes.com/interactive/2020/04/02/us/coronavirus-social-distancing.html

Explore some of the current data visualization dashboards and data journalism pieces about COVID-19

1 Jin Wu, Weiyi Cai, Derek Watkins and James Glanz, How the Virus Got Out, *NYT*, March 22, 2020

2 Harry Stevens, Why outbreaks like coronavirus spread exponentially, and how to “flatten the curve”, *Washington Post*, 2020-03-13

3 https://www.againstcovid19.com/ (explore all the different visualizations and analytics)

4 https://ourworldindata.org/coronavirus

5 https://www.nytimes.com/2020/03/30/health/coronavirus-restrictions-fevers.html

6 https://healthweather.us/?mode=Atypical

7 https://www.nytimes.com/interactive/2020/04/03/us/coronavirus-stay-home-rich-poor.html

Read these articles:

Note: the following articles have lots of technical details - you can skip them if you like, just focus on the key ideas, methods, and results.

1 Social sensing and analytics - COVID-19 example:
Michiel Bakker, Alex Berke, Matt Groh, Alex 'Sandy' Pentland, and Esteban Moro, Effect of social distancing measures in the New York City metropolitan area (MIT research report (2020-03-29).

2 Modeling and predicting - COVID-19 example:
Neil Ferguson et al, Impact of non-pharmaceutical interventions (NPIs) to reduce COVID19 mortality and healthcare demand, 2020-03-16 (this is the article from the UK research team that convinced UK government's that they also need to implement distancing measures like other countries)

Start reading these chapters on history of statistics (leading to the wide use of big data, analytics, and prediction today):

1 Alain Desrosieres, *A History of Statistical Reasoning: The Politics of Large Numbers* (1998) - read chapter 3: *Averages and the Realism of Aggregates* and chapter 4: *Correlation and Realism of Causes*.

You don't have to finish these chapters by April 7 - we will discuss them after the break.

I do recommend that you read all other chapters during the Spring break - but this is not required. This is the essential book for understanding the big data / statistics / data science paradigm of our own period.

April 21: History of statistics

Class notes:

https://en.wikisource.org/wiki/Popular_Science_Monthly/Volume_1/May_1872/Quetelet_on_the_Science_of_Man

Desrosieres, chapter 3:

eighteenth-century - Vauban

- An *average* indicated "what was between two extremes."
- the term "common" referred to something ordinary, well-worn, and universal, or to "something amended during a continual series of occurrences"

Quetelet distinguished *three* kinds of mean values, the presentation of which would provide the core of numerous statistical debates until the beginning of the twentieth century. When Adolphe Bertillon (1876) presented these distinctions thirty years after Quetelet, he designated them quite clearly.

- The *objective mean* corresponded to a real object, subjected to a certain number of measurements. (the successive measurements of a real object ; the points of impact of a series of shots directed at a target)

- The *subjective mean* resulted from the calculation of a central tendency, in the case in which the distribution presented a form adjustable to that of the “binomial law” (the case of heights). Only these two cases really deserved the term “mean value.”

- The third case presented itself as if the distribution did not have this “normal” form at all. Bertillon termed it an *arithmetical mean* to emphasize the fact that it was pure fiction.”

After his study of heights, Quetelet continued his measurements of other physical attributes: arms and legs, skulls, and weights, for which he still observed distributions in accordance with binomial law. From this he inferred the existence of an ideal average man, in whom all average characteristics were combined and who constituted the Creator’s goal—perfection.

The speculations of the philosophers of the Enlightenment aimed at making explicit the criteria of rationality for the choices and decisions of an informed person—the embodiment of a universal human nature, based on reason. In the nineteenth century, in contrast, the French Revolution and its unpredictable convulsions substi- tuted questions about society and its opaqueness in place of questions concerning rational people and their judicious choices. Not only was this society henceforth seen as a mysterious whole, but it was seemingly viewed as if from the outside.

This new entity, ***society,*** objectified and seen from the outside, endowed with autonomous laws in relation to individuals, characterizes the thought of all the founding fathers of sociology, a science taking shape precisely at this time. Comte, Marx, Le Play, Tocqueville, Durkheim.

Free will vs determinism:

As a member of the social body, he (man in general) is subject at every instant to the necessity of causes and pays regular tribute to them; but as a man (an individual)

mustering all the energy of his intellectual faculties, he can in some way subdue causes, modify their effects, and try to attain a better state. (Quetelet, 1832)

The use of statistical averages crops up more indirectly in another medical controversy, at the time of the cholera epidemic (Delaporte, 1990). This epidemic appeared in Asia during the 1820s and spread through western Europe, reaching France in 1832. Doctors were of divided opinion as to possible explanations for the illness. The contagionists—among them Moreau de Jonnes—declared it was transmitted by contact with sick people. Others, more numerous, thought the disease was not contagious, but was spread by infection, encouraged by the unsanitary living conditions often found in certain parts of urban areas. They based their conviction on the statistics of death rates, tallied according to the various Paris streets and the economic level of their inhabitants.

Durkheim (1894): "**We shall call "normal" these social conditions that are most generally distributed**, and the others "morbid" or "pathological.".. It is the functions of **the average organism** that the physiologist studies; and the sociologist does the same."

Durkheim (1897): now..the average statistical man is often a rather sorry figure, who doesn't want to pay his taxes or fight in a war. He is not a good citizen. "the proper way to measure any element of a collective type is not to measure its magnitude within individual consciences and to take the *average* of them all. Rather, it is their *sum* that must be taken." [Durkeim now makes a distinction] between a collective type - a reflection of the ideal of a good citizen - and the average type, the arithmetic resultant of selfish individuals.

Desrosieres, chapter 4:

statisticians of that time had to invent plausible junctions and translations linking their still summary tools with philosophical, political, and administrative rhetoric.

This dual growth of techniques—for recording and formatting a host of new objects—had the effect of considerably extending the reality of the statistical world, and thus of pushing back the frontier zone in which statistical rhetoric confronted other rhetorics. In the nineteenth century this space was still exiguous, and its frontier quickly reached. Today it has become so enormous that only rarely do certain statisticians have the opportunity to encounter these contact zones. A language specific to this universe

can be employed daily, and no longer arouses questions of the type raised by analysts or critics of Quetelet, or even by Karl Pearson in his *Grammar of Science.*

Pearson - **from causation to correlation (more general concept)**. 1911: "between these two limits of absolute independence and absolute dependence all grades of association may occur. When we vary the cause, the phenomenon changes, but not always to the same extent; it changes, but has variation in its change. The less the variation in that change the more nearly the cause defines the phenomenon, the more closely we assert the association or the correlation to be. It is this conception of correlation between two occurrences embracing all relationships from absolute independence to complete de- pendence, which is the wider category by which we have to replace the old idea of causation."

the heart of the modern procedure of defining "statistics," in the technical sense of judicious combinations of elemental data, that satisfy certain requirements of optimization.

April 28: Quantitative analysis of media, culture and society

Computational Social Science:

Computational Social Science, 2009 - the article that established the field.

Measuring the predictability of life outcomes with a scientific mass collaboration, 2020

Culture as Data - research examples:

Charting Culture, 2014

Why Songs of the Summer Sound the Same? 2018

Quantifying reputation and success in art, 2017

Understanding Musical Diversity via Online Social Media, 2015

May 5: Computational media analysis in industry, academic research and data art

Lecture references:

How We Understand Musical Genres. 2013

Explore interactive visualization referred to in this text: Every Noise at Once

““There’s no imposed taxonomy of genres, and we have no objection to genres that overlap in small or even large part if they represent a subtle distinction that somebody, somewhere might care about (e.g. “gothic metal” vs. “symphonic metal” vs. “gothic symphonic metal”).” “In thsame spirit, any artist can be in as many different genres as apply. The genres aren’t even of the same sort: “tekno” is a very particular dance-music style, defined by tempo and historical circumstance; “wind ensemble” is a configuration of performers; “Christian hip-hop” is philosophical distinction; “Slovenian rock” a cultural and geographic one.”

Yale Digital Humanities Lab, Neural Neighbours (2017)
https://s3-us-west-2.amazonaws.com/lab-apps/pix-plot/index.html
http://dhlab.yale.edu/projects/neural_neighbors.html

Moritz Stefaner. Multiplicity, 2018. (make sure to read the whole text about creation of the project).
Video showing layout variations: https://vimeo.com/257880299

Ted Underwood and Jordan Sellers, The Emergence of Literary Diction. Journal of Digital Humanities, 2012.

Ted Underwood, David Bamman, and Sabrina Lee. The Transformation of Gender in English-Language Fiction. *CA: Journal of Cultural Analytics*, February 2, 2018.

Interactive visualization for this article.

Other recommended publications and projects:

J. E. Cutting, J. E. and A. Candan, A. Shot durations, shot classes, and the increased pace of popular movies. *Projections: The journal for movies and mind*, 2015, 9(2), 40-62.

S. P. Fraiberger et al. Quantifying reputation and success in art. 10.1126/science.aau7224 (2018).

Kevin Matzen, Kavita Bala, and Noah Snavely. StreetStyle: Exploring world-wide clothing styles from millions of photos, June 6, 2017. arXiv:1706.01869v1 [cs.CV]

Patterns in cloves (using social media photos): http://streetstyle.cs.cornell.edu/trends.html

Quanzeng You, Darío García-García, Mahohar Paluri, Jiebo Luo, and Jungseock Joo. Cultural Diffusion and Trends in Facebook Photographs. May 24, 2017. arXiv:1705.08974v1 [cs.CV] . (Uses 1 billion photos).

AI background - you need to know these terms:

https://www.nytimes.com/2018/10/18/business/an-ai-glossary.html

May 13: Media, AI, and Aesthetics - photography as a case study

Readings:

Pierre Bourdieu, Part I, *Photography: A Middle Brow Art*, 1965

Alise Tifentale and Lev Manovich, *Competitive Photography and the Presentation of the Self*, 2016.

Emanuele Arielli, Taste and the Algorithm, 2018.

Lev Manovich, AI Aesthetics, 2018.

Recommended - use of data in media production:

https://www.ted.com/talks/sebastian_wernicke_how_to_use_data_to_make_a_hit_tv_show#t-217366

Recommended - digital humanities and digital history talks:

https://www.ted.com/talks/jean_baptiste_michel_erez_lieberman_aiden_what_we_learned_from_5_million_books

https://www.ted.com/talks/frederic_kaplan_how_to_build_an_information_time_machine?language=en#t-351218

Possible readings:

Can we Think Without Categories? 2018

Emanuele Arielli, *Taste and the algorithm*, 2018

Social credits system in china, and how we (mis)understand use of technology in other parts of the worlds:

https://www.scmp.com/news/china/politics/article/2185303/hi-tech-dystopia-or-low-key-incentive-scheme-complex-reality

https://logicmag.io/china/the-messy-truth-about-social-credit/

Thinking about the world during and after the crisis:

https://strelkamag.com/en/article/18-lessons-from-quarantine-urbanism

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Other class topics:

Data Visualization, Data Science (2000-)

- Influence of data science on advertising

Archives, Datasets, Social Media (1990s-)

- Memory / open government

Artificial Intelligence (1950s-)

Modernism and Media

Photography (1920s, 1960s, 2010s)
Walter Benjamin, Ronald Barthes, Pierre Bourdieu, Susan Sontag

Cinema (1920s-1930s)
Sergei Eisenstein, Andre Basin

- Deleuze on cinema